UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/051,820	WU ET AL.
	Examiner	Art Unit
	David Silver	2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>04 October 2007</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>2-10,12-16,18 and 23-29</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>2-10,12-16,18 and 23-29</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. The Instant Office Action is in response to a Request for Continued Examination filed 10/04/2007.

2. Claims 2-10, 12-16, 18, 23-29 are currently pending in Instant Application.

Priority

3. Claim to priority have been acknowledged in previous Office Action.

Response to Arguments

Response: Interview Request

4. **Examiner Response:**

Request for interview has been granted and took place on Friday December 14, 2007 at 2:30pm. See

attached Interview Summary form.

During the interview the Applicants requested that an attempt be made to find matter in the Specification

that may be incorporated into the claims such that the claims may be found allowable. Upon review,

there does not appear to be subject matter in the Specification that may be incorporated into the claims

that would render a novel and patentable invention.

Response: Claim Interpretation

5. **Examiner Response:**

Although for the purpose of simulation, link status and pipe flow are equivalent, the issue is moot in view

of the new grounds of rejection presented below.

During a simulation, within the mathematical construct / formula, the only input that is necessary is the

pipe flow. When the link status is open, it does not affect the formula as the only determinant is whether

fluid is flowing. When the link status is closed, it also does not affect the formula as the only determinant

is that the fluid is not flowing. Therefore, the pipe flow encompasses link status and is this equivalent to

line status.

Response: 35 U.S.C. § 101

6. **Applicants argue:**

"The Applicant respectfully urges that the amended claims are statutory as they provide a useful,

tangible, and concrete result, namely "providing the corresponding calibration solution." Such providing is

useful as specific, substantial and credible utility is obtained by makings something available that was not

available before. Such providing is tangible as a real-world result occurs, namely something is made

available for use. Finally, the result is concrete as the result is substantially repeatable, i.e., the

Applicant's techniques may be repeated again to provide additional results. Accordingly, the applicant

respectfully urges that the claims are statutory." (Remarks: page 11)

7. **Examiner Response:**

The claims remain drawn to non-statutory subject matter as not having a substantial practical application.

Specifically, although the model may have a practical application of predicting water demands, the

calibration of a model (abstract idea), does not have a practical application. As such, the claims are

drawn to non-statutory subject matter. In this situation, however, the only disclosed practical application

of the model is within the Background of the Specification, page 1 lines 18-20, and is therefore taken as

admitted prior-art.

Additionally, the step of "providing the corresponding calibration solution" does not necessitate a tangible

result. It is unclear how the solution is provided.

Response: 35 U.S.C. § 112

8. **Examiner Response:**

Applicants merely state that one of ordinary skill in the art would have known how o make and use the

invention without providing evidence to the alleged fact. Rejection is <u>maintained</u>.

Response: 35 U.S.C. § 102/103

9. **Examiner Response:**

Applicants' arguments are moot in view of new grounds of rejection presented below.

Specification

10. Specification is objected-to for minor informalities: the "CROSS REFERENCE TO RELATED

 APPLICATION" section should be updated to reflect the priority application's status as being

 abandoned.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 2-10, 12-16, 18, and 23-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims remain drawn to non-statutory subject matter as not having a substantial practical application. Specifically, although the model may have a practical application of predicting water demands, the calibration of a model (abstract idea), does not have a practical application. As such, the claims are drawn to non-statutory subject matter.

Claim 29 is deemed to be drawn to statutory subject matter. Additionally, the practical application for the model is disclosed in **(Specification, page 1 lines 18-20)**.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **enablement requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 3, the claim does not enable one of ordinary skill in the art to make and use the invention because it does not enable weighting factors one of linear, square, square root or log function. Specifically, the specification does provide a vague reference to this terminology but does **not** enable one to make and use the invention. **How** are these functions applied?

13. Claims not specifically mentioned are rejected by virtue of their dependency.

14. The Applicants are required to fix all other similar occurrences of the above-cited deficiencies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office

action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 2-5, 7-10, 12-16, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Walters's "Calibration of water distribution network models using genetic algorithms", and further in

view of WaterCAD for Windows, On-Line Help Text, Version 3.0, 1997 (already of record by

Applicants in IDS dated 4/27/2006).

Walters discloses: 2. A method of automatically calibrating a water distribution network, comprising the

steps of:

(A) selecting calibration parameters including one or more of, pipe roughness and junction

demand **(Abstract. page 139 last para ... valve; page 137 para 2 (section 4.4 para 1) ...**

partially closed valve; page 135 first full paragraph; page 134 last 6 lines and page 135 top 3

lines; page 139 paragraph 1; page 139 first paragraph of section 4.5);

(B) collecting field observed data including pipe flow measurement and a junction pressure

measurement for at least one point in the water distribution network, and including corresponding

loading conditions and boundary conditions that existed in the network when said field observed data

was collected and passing such information to a genetic algorithm module **(page 135 last 2**

paragraphs; page 135 first full paragraph; page 134 last 6 lines and page 135 top 3 lines;

page 139 paragraph 1; page 139 first paragraph of section 4.5);

(C) generating at said generic algorithm module a population of calibration solutions that

comprise a set of calibration results, using a genetic algorithm **(page 132 para 3; page 135 first full**

paragraph; page 134 last 6 lines and page 135 top 3 lines; page 139 paragraph 1; page 139

first paragraph of section 4.5);

     (D) running multiple hydraulic simulations of each solution to obtain a set of predictions of pipe flows and junction pressures at selected points in the network, corresponding to the loading conditions and associated boundary conditions when the field observed data was collected **(Abstract; page 132 para 1-3 (emphasis on para 3), page 135 para 2)**;

     (E) performing a calibration evaluation including computing a goodness-of-fit value for each calibration solution based upon differences between field observed values and said predictions; including flows and pressure head/water levels **(goodness of fit ... fitness on page 133 para 3)**;

     (F) repeating steps (C) through (E) until a user-selected desired goodness-of-fit value is obtained resulting in a corresponding calibration solution for calibrating a water distribution model; and (G) providing the corresponding calibration solution **(page 134 para 1; page 137 para 2 (Section 4.4))**. Walters does not expressly disclose that the calibration parameters include link status. Walters implicitly performs this as previously demonstrated in the Previous Office Actions. However, to make the record clear, attention is directed to WaterCAD, pages 7-31, 7-19, 10-3, 7-47, and 7-51 which disclose the parametric use of pump status (link status). It would have been obvious to one of ordinary skill in the art <water distribution simulation> at the time of Applicant's invention to combine the references in order to take into account more variables and parameters; thus, creating a realistic model. Thereby, saving time and costs associated with modeling and building a water system that is not calibrated and having to perform post-build adjustments. In fact, Walters provides motivation in using the link/pump status as a calibration parameter because he acknowledges that it may affect the results **(page 137, section 4.4 first paragraph)**: "of particular interest was the high friction needed in a particular run of pipes, suggesting the possible presence of a partially closed valve on a high strategic link". Thus, Walters would have been motivated to take link status into account to better calibrate his model.

It is further noted that the actual "calibration parameters" do not appear to actually be used within claim 1 for the purpose of the genetic algorithm.

Walters discloses: 3. The method of automatically calibrating a water distribution model as defined in claim 2, including the further step of:

(A) prior to passing said field observed data to said genetic algorithm module selecting a weighting function for at least one of said field observed data measurements, said weighting function formulated as a weighting factor of observed pressure heads and flows **(page 133 para 1; page 135 para 2)**; and

(B) selecting as said weighting factors one of linear, square, square root or log function of the ratio of individual values for flow or hydraulic pressure to a sum of the observed values of flows or hydraulic pressure **(page 135 para 2; page 133 para 1 and 3; page 134 para 3 "parameter tuning")**; and

(C) applying said weighting function when running said calibration evaluation to determine said goodness-of-fit value **(page 135 para 2)**.

Walters discloses: 4. The method of automatically calibrating a water distribution model, as defined in claim 2, including the further step of: selecting as said loading condition, at least one water demand loading at a predetermined time of day, corresponding to a time of day when a field observed data measurement has been made **(page 135 para 2 and last para, page 137 section 4.4 para 3)**.

Walters discloses: 5. The method of automatically calibrating a water distribution model, as defined in claim 4, including the further step of selecting multiple loading conditions representing demand loading at various times of day when field observed data measurements have been made **(page 135 para 2 and last para)**.

Walters discloses: 7. The method of automatically calibrating a water distribution model as defined in claim 2 including the further step of: after said optimized set of calibration data is obtained, making manual adjustments to this information for said water distribution model calibration **(page 134 para 3, abstract, page 135 para 2 and last para)**.

Walters discloses: 8. The method of automatically calibrating a water distribution network model as defined in claim 2, including the further step of performing a sensitivity analysis by varying model input

parameters over a predetermined range and observing the response thereto of said model **(page 134 para 3)**.

Walters discloses: 9. The method of automatically calibrating a water distribution network model as defined in claim 8 including the further step of adjusting the collection of field observed samples based upon the results of said sensitivity analysis **(page 134 para 3)**.

Walters discloses: 10. A computer readable medium containing executable program instructions for automatically calibrating a water distribution model of a water distribution network that has links that include pipes and junctions, the executable program instructions comprising program instructions for:

(A) generating a graphic user interface by which a user may enter data concerning field observed data, demand alternatives and other information for the network **(page 133 para 2; Abstract; sections 2.1, 2.3, 3, 4.2, and 4.4)**;

(B) a calibration module configured to produce calibration information for a water distribution model constructed from user-selected calibration parameters that include at least one of pipe roughness, junction demand information, roughness groups, and link status **(page 133 para 2; Abstract; sections 2.1, 2.3, 3, 4.2, and 4.4)**;

(C) a genetic algorithm module coupled to said calibration module and said user interface such that information about said calibration parameters, and user-entered field observed data, including field data that include calibration target data and boundary data, said genetic algorithm being configured to produce a population of calibration solutions and said graphic user interface being configured to allow a user to select at least one of goodness-of-fit criteria, a weighting functions, and one or more genetic algorithm parameters **(page 133 para 2; Abstract; sections 2.1, 2.3, 3, 4.2, and 4.4, note MPEP 2111.04 regarding statements such as "allow")**; and

(D) a hydraulic network simulation module communicating with said genetic algorithm module such that calibration solutions generated by said genetic algorithm can be run by said hydraulic network simulation module to predict actual behavior of said network, such that predictions are passed back to said calibration module for comparison with field observed data to produce goodness-of-fit values, until a

desired goodness-of-fit value satisfying user-selected goodness-of-fit criteria is obtained resulting in a

corresponding calibration solution for calibrating a water distribution model ; wherein the corresponding

calibration solution is provided for use **(page 133 para 2; Abstract; sections 2.1, 2.3, 3, 4.2, and

4.4)**.

Walters discloses: 12. The computer readable medium as defined in claim 10, comprising program

instructions for performing the further steps of repetitively computing successive generations of solutions

in one or more calibration runs, and calibration solutions are stored for retrieval and evolution. **(page

133 para 2; Abstract; sections 2.1, 2.3, 3, 4.2, and 4.4)**.

Walters discloses: 13. The computer readable medium as defined in claim 10 further comprising: a

database including information regarding water distribution networks for constructing models of said

networks, and into which information can be saved **(page 133 para 2; Abstract; sections 2.1, 2.3, 3,

4.2, and 4.4)**.

Walters discloses: 14. The computer readable medium as defined in claim 10 wherein said user interface

further allows a user to enter information regarding alternative demand loadings, representing a demand

for water supply at a given point in time, at a given location in the network **(page 133 para 2;

Abstract; sections 2.1, 2.3, 3, 4.2, and 4.4)**.

Walters discloses: 15. A method as described in claim 2 wherein link status is a status of being opened or

closed of one or more of pipes, valves and, as being on or off for pumps, in the water distribution model

of the water distribution network that is being calibrated **(page 133 para 2; Abstract; sections 2.1,

2.3, 3, 4.2, and 4.4)**.

Walters discloses: 16. The method as defined in claim 2 further comprising the step of: computing a

roughness value, roughness multiplier and identifying link status **(page 133 para 2; Abstract;

sections 2.1, 2.3, 3, 4.2, and 4.4)**.

Walters discloses: 23. (New) A computer implemented method, the method comprising:

        calibrating a water distribution model wherein model calibration parameters are generated by

providing an initial selection of parameters to be determined including link status and one or more of pipe

roughness and junction demand to a genetic algorithm module **(page 135 first full paragraph; in simulations link status is functionally equivalent to pipe flow; Abstract. page 139 last para ... valve; page 137 para 2 (section 4.4 para 1) ... partially closed valve; page 134 last 6 lines and page 135 top 3 lines; page 139 paragraph 1; page 139 first paragraph of section 4.5)**, and performing the steps of:

(A) receiving at said genetic algorithm module, said selected parameters and field observed data, and generating at said genetic algorithm module a calibration solution for said calibration parameters **(abstract; page 132 paragraph 1)**;

(B) receiving said calibration solution at an associated hydraulic simulation module and running a hydraulic simulation of the model using said calibration solution **(abstract; page 132 paragraph 1)**;

(C) producing as a result at said hydraulic simulation module, a set of predictions of junction pressures and pipe flows for nodes in a water distribution model for said calibration solution **(abstract; page 132 paragraph 1; page 137 table 3 and section 4.4 in general; page 135 last 2 paragraphs; page 135 first full paragraph; page 134 last 6 lines and page 135 top 3 lines; page 139 paragraph 1; page 139 first paragraph of section 4.5)**;

(D) passing said predictions for that calibration solution to an associated calibration module to evaluate how closely the predictions are to field observed data and assigning a goodness of fit value to that calibration solution **(page 132, paragraph 1 "reaching a good calibration"; page 139 paragraph 1; page 140 section 5 "better fit")**;

(E) repeating steps A through D a plurality of times and passing the goodness of fit value to a genetic algorithm module for each solution **(page 140 section 5 "iterative process" / "better fit")**; and

(F) calculating at said genetic algorithm module, solutions that correspond with a minimum discrepancy between the simulated predictions and the observed data to obtain a desired set of calibration parameters for use in calibrating a water distribution model; and (G) providing the desired set of calibration parameters **(Abstract paragraph 2; page 134 paragraph 2 "lower cost solutions" /**

convergence).

Walters discloses: 24. (New) The method as defined in claim 23 including the further step of performing

a sensitivity analysis by varying parameters for a roughness, demand and link status over a

predetermined range and observing the relative change in the model response thereto **(page 135 line 1**

to second full paragraph).

Walters discloses: 25. (New) The method as defined in claim 23 including the further step of matching

the model to historical field conditions **(page 131 (title page); paragraph 1" modeling the system**

until a satisfactory match is obtained between modeled and observed values").

Walters discloses: 26. (New) The method as defined in claim 23 including the further step of assigning a

selected group of pipes to be in a particular roughness group and assigning a roughness calibration

variable being one of a roughness coefficient or a roughness coefficient multiplier as the roughness

calibration parameter for that roughness group **(page 134 section 3 paragraph 1: "all pipes can**

have individually variable roughness values, or groups of pipes can be pre-selected to have a

common variable roughness").

WaterCAD discloses: 28. (NEW) The method of automatically calibrating a water distribution network

model as defined in claim 2 wherein link status indicates whether valves, pipes or pumps are open or

closed **(7-31: "A pump can have two different status conditions; On (normal operation), Off**

(no flow under any conditions).").

As per claim 29, note the rejection of claim 1 above. The Instant Claim recites substantially same

limitations and claimed subject matter as the above-rejected claim and is therefore rejected under same

prior-art teachings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walters's

"Calibration of water distribution network models using genetic algorithms" in view of Official Notice

taken.

As per claim 6, Walters discloses: The method of automatically calibrating a water distribution model as

defined in claim 1 wherein said boundary conditions include pressures control valve settings and pump

operation speeds **(page 139 last para; page 140 first para)**. Walters however does not expressly

disclose that the boundary conditions include water storage tank levels. Official Notice is taken with

respect to this limitation. It would have been obvious to one of ordinary skill in the art at the time of

Applicant's invention to combine the references in order to have a more detailed and realistic model that

would encompass more variables on the boundary conditions. This motivation and feature is displayed in

ATSDR's "Summary of Findings" **(page 2 para 1)**.

As per claim 18, Walters fully discloses all limitations of claim 10. Walters however does not disclose

program instructions for performing the further steps of pausing a calibration run to determine

intermediate values and pausing, observing the intermediate values by a user, and resuming said

calibration run. Official Notice is taken with respect to this feature. It would have been obvious to one of

ordinary skill in the art <computer and water engineering / simulation / modeling> at the time of

Applicant's invention to combine the features in order to allow for data to be saved and used at a later

time or location. This is especially advantageous when the simulation is moved to a faster computer or

saved in event of power failure; thus reducing the time and costs associated with re-running the

simulation from the beginning. It would have been obvious to observe the intermediate values to verify

that the calibration has not "run away" on an incorrect path. Doing said observation would allow the user

to stop the calibration and adjust parameters accordingly. Thus, saving time and costs associated with

performing a calibration which yields known invalid results before the calibration run is completed.

Support for Amendments and Newly Added Claims

17. Applicants are respectfully requested, in the event of an amendment to claims or submission of new

claims, that such claims and their limitations be directly mapped to the specification, which provides

support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02

recites: "Applicant should also specifically point out the support for any amendments made to the

disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37

CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments**

not pointing to <u>specific support</u> in the disclosure may be deemed as not complying with

provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.

Generic statements such as "Applicants believe no new matter has been introduced" may be deemed

insufficient.

Requests for Interview

18. In accordance with 37 CFR 1.133(a)(3), requests for interview must be made in advance.

Interview requests are to be made by telephone (571-272-8634) call or FAX (571-273-8634). Applicants

must provide a <u>detailed agenda</u> as to what will be discussed (generic statement such as "discuss §102

rejection" or "discuss rejections of claims 1-3" may be denied interview).

The detail agenda along with any proposed amendments is to be written on a PTOL-413A or a custom

form and should be faxed (or emailed, subject to MPEP 713.01.I / MPEP 502.03) to the Examiner <u>at least</u>

<u>3 days prior</u> to the scheduled interview.

19. Interview requests submitted within amendments may be denied because the Examiner was not

notified, in advance, of the Applicant Initiated Interview Request and due to time constraints may not

be able to review the interview request to prior to the mailing of the next Office Action.
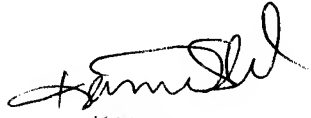
Conclusion

20. All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should

be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be

reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are

unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application

Information Retrieval (PAIR) system. Status information for published applications may be obtained from

either Private PAIR or Public PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at

866-217-9197 (toll-free).

/ DAVID SILVER /
David Silver, Patent Examiner
Art Unit 2128

KAMINI SHAH
SUPERVISORY PATENT EXAMINER